查询T73327供应商

T73327 / 73327A / 73327B

15-36 MHz, 3.3V VCXO

Applications

- Crystal-driven clock source for low cost set top boxes

General Description

The TLSI T73327/73327A is a single-chip, low-jitter Voltage-Controlled-Crystal-Oscillator. The device accepts a 15 MHz-36 MHz crystal input and produces a low-jitter output at the same frequency. A 0V to +3.3V control signal is used to fine-tune the output clock frequency in the ±120ppm range.

Features

- +3.3V operating voltage
- Uses inexpensive pullable crystals
- 12mA drive capability at TTL levels
- Low Cost
- 240 ppm pull range (±120 ppm)
- Excellent pull range linearity
- 8-pin SOIC, 8-pin MSOP packages available
- Alternate industry pinouts available

Figure 1. Functional Block Diagram

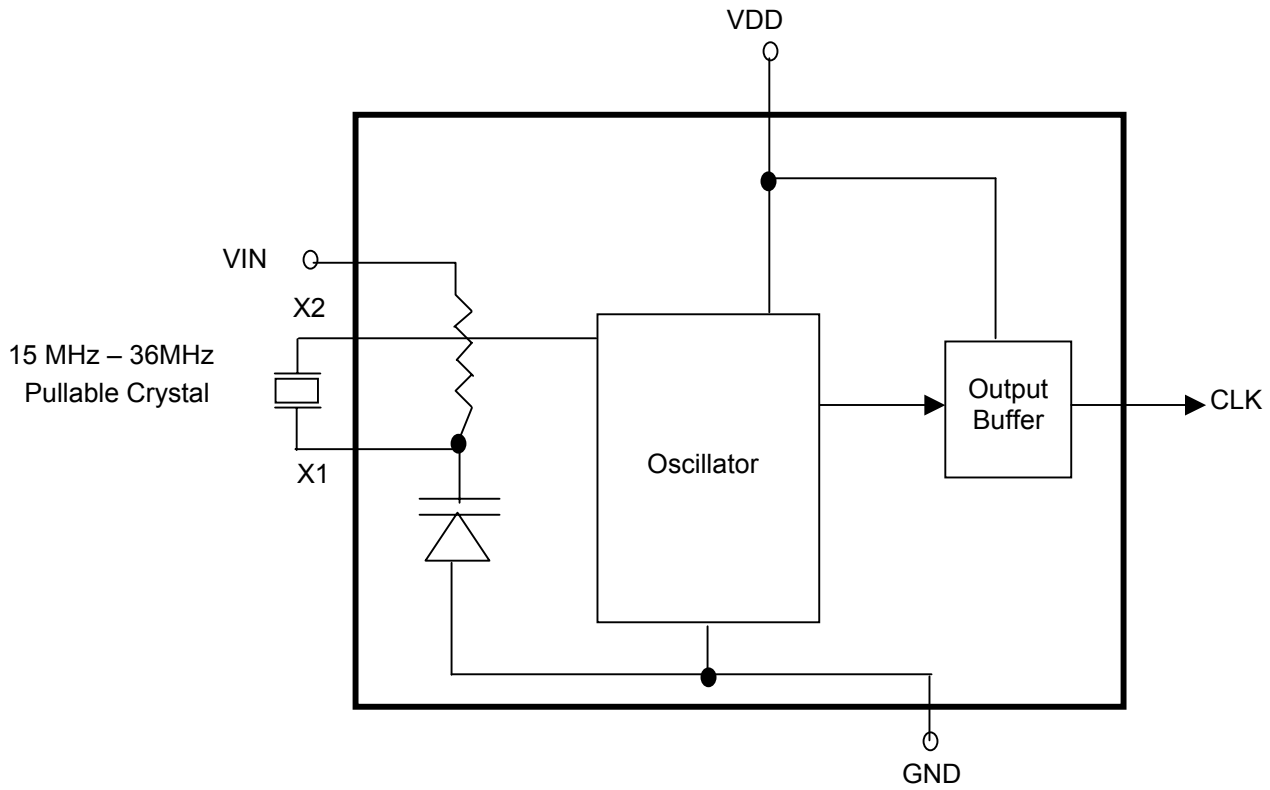

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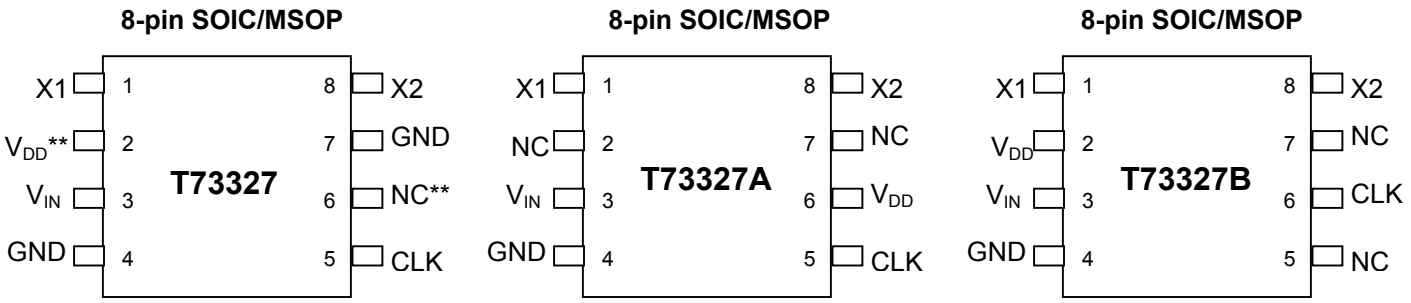
Figure 2. Pin Configuration



8-pin SOIC/MSOP
(See pages 4 & 5
for package outlines
&
ordering information)

Table 1. Pin Description

Name	Pin No.			Type	Description
	73327	73327A	73327B		
X1	1	1	1	Xi	Crystal connection. Connect to a 15 MHz - 36MHz pullable crystal
V_{DD}**	2**	6	2	P	This pin can alternately be used to connect V_{DD} instead of pin 6 or left unconnected (for T73327 only).
V_{IN}	3	3	3	I	Tuning control input. Zero to +3.3V signal controls the frequency of the VCXO.
GND	4, 7	4	4	P	Connect to ground.
CLK	5	5	6	O	Clock output
NC**	6**	-	5	NC	This pin can alternately be used to connect V_{DD} instead of pin 2 or left unconnected (for T73327 only).
NC	-	2, 7	7	NC	Do not connect
X2	8	8	8	Xi	Crystal connection. Connect to a 15 MHz – 36 MHz pullable crystal.

Legend: I = Input
O = Output
P = Power supply connection
Xi = Crystal connections
NC = No connection

****Note**: **On the T73327 only, both pin 2 and pin 6 are internally connected to V_{DD}. Either pin or both can safely be connected to V_{DD} without damaging the part. Alternately, at the user's option, one pin may be used for V_{DD} with the other pin being left unconnected (NC).**

Table 2. Absolute Maximum Ratings

Parameter	Conditions	Min	Typ	Max	Units
Supply voltage, V_{DD}	Referenced to GND			7	V
Inputs and Clock Outputs	Referenced to GND	-0.5		VDD+0.5	V
Soldering Temperature	Max of 10 seconds			+260	°C
Storage temperature		-65		+150	°C

Stresses above those listed under Absolute Maximum Ratings may cause permanent damage to the device. These ratings are stress specifications only and correct functional operation of the device at these or any other conditions above those listed in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect product reliability.

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Table 3. Operating Conditions

Parameter	Conditions	Min	Typ	Max	Units
Operating Voltage, V_{DD}		+3.135	+3.3	+3.465	V
Input High Voltage, V_{IH}, X1 pin only		+2.5			V
Input Low Voltage, V_{IL}, X1 pin only				+0.4	V
Operating Temperature		0		+70	°C
VCXO control voltage, V_{IN}		0		+3.3	V

Table 4. DC Electrical Characteristics

T_A = 0°C to +70°C, V_{DD} = +3.135 V to +3.465 V

Parameter	Condition	Min	Typ[1]	Max	Units
Output High Voltage, V_{OH}	I_{OH} = -12mA	2.4			V
Output Low Voltage, V_{OL}	I_{OL} = 12mA			0.4	V
Operating Supply Current, I_{DD}	No Load, 27 MHz		14.0	20.0	mA
Short Circuit Current	Each output		±50		mA
Input Capacitance			7		pF

Note:
1. Typical values are at V_{DD} = 3.3V and +25°C

Table 5. AC Electrical Characteristics

T_A = 0°C to +70°C, V_{DD} = +3.135 V to +3.465 V

Symbol	Parameter	Condition	Min	Typ[1]	Max	Units
fosc	Input Crystal Frequency		15	27	36	MHz
tr	Output Clock Rise Time	+0.8 to +2.0V			1.5	ns
tf	Output Clock Fall Time	+2.0 to +0.8V			1.5	ns
t_{od}	Output Clock Duty Cycle	At V_{DD}/2	45	50	55	%
Lin	Pull Range Linearity [2]	V_{IN} = 0.1 V_{DD} ~ 0.9 V_{DD}			5	%
	Frequency vs Supply voltage				5	%
t_{jit} (pk – pk)	Maximum Absolute Jitter (Peak to Peak)	C_L = 15pF			50	ps
	Phase Noise	27 MHz @ 10 KHz 27 MHz @ 100 KHz			-154 -156	dBc/Hz dBc/Hz
f_{PULL}	Output frequency pullability	0V ≤V_{IN} ≤ +3.3V	±100	±120		ppm

Note:
1. Typical values are at V_{DD} = +3.3V and +25°C
2. Mil-PRF-55310D 4.8.31.5 Deviation Linearity

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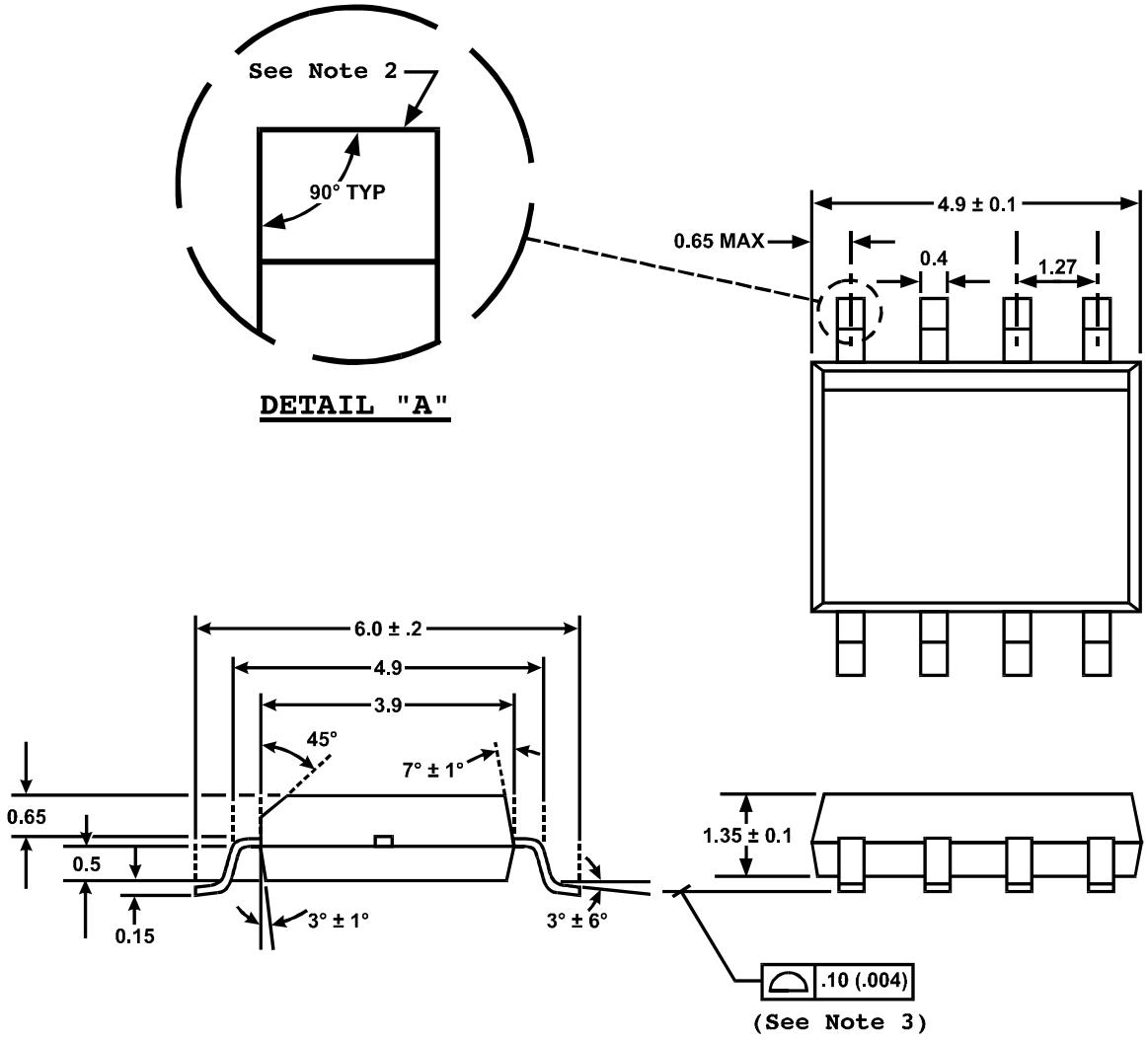
Table 6. Pullable Crystal Specifications

Parameter	Symbol	Value
Correlation (Load) Capacitance	C_L	18 pF (typ)
Capacitance Ratio	C_O/C_1	240 max
Equivalent Series Resistance	ESR	30 Ω max

Figure 3. Package Outline (8-pin SOIC)



Note: 1) All dimensions are in mm.
2) All leads must be blunt cut. (See DETAIL "A")
3) Lead coplanarity not to exceed 0.004" maximum.

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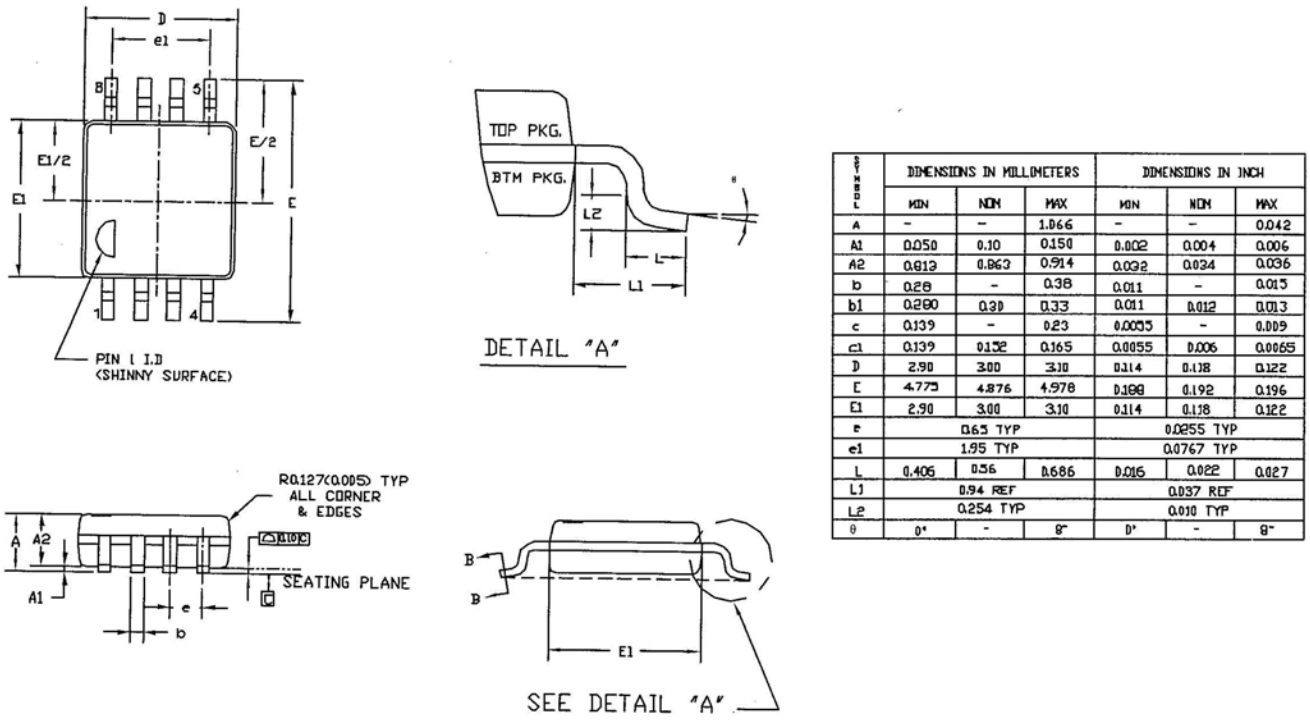
Figure 4. Package Outline (8-pin MSOP)



SYMBOL	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCH		
	MIN	NOM	MAX	MIN	NOM	MAX
A	-	-	1.066	-	-	0.042
A1	0.050	0.10	0.150	0.002	0.004	0.006
A2	0.813	0.863	0.914	0.032	0.034	0.036
b	0.28	-	0.38	0.011	-	0.015
b1	0.280	0.30	0.33	0.011	0.012	0.013
c	0.139	-	0.23	0.0055	-	0.009
c1	0.139	0.152	0.165	0.0055	0.006	0.0065
D	2.90	3.00	3.10	0.114	0.118	0.122
E	4.775	4.876	4.978	0.188	0.192	0.196
E1	2.90	3.00	3.10	0.114	0.118	0.122
e	0.65 TYP			0.0255 TYP		
e1	1.95 TYP			0.0767 TYP		
L	0.406	0.56	0.686	0.016	0.022	0.027
L1	0.94 REF			0.037 REF		
L2	0.254 TYP			0.010 TYP		
θ	0°	-	8°	0°	-	8°

Table 7. Ordering Information

Part Number	Marking	Shipping/Packaging	No. of Pins	Package	Temperature
T73327-SO8 T73327A-SO8 T73327B-SO8	T73327 T73327A T73327B	Tubes	8	SOIC	0°C to +70°C
T73327-SO8-TNR T73327A-SO8-TNR T73327B-SO8-TNR	T73327 T73327A T73327B	Tape & Reel	8	SOIC	0°C to +70°C
T73327-MO8 T73327A-MO8 T73327B-MO8	T73327 T73327A T73327B	Tubes	8	MSOP	0°C to +70°C
T73327-MO8-TNR T73327A-MO8-TNR T73327B-MO8-TNR	T73327 T73327A T73327B	Tape & Reel	8	MSOP	0°C to +70°C
T73327-DIE	N/A	Die in Waffle Pack	8	N/A	0°C to +70°C
T73327-DPW	N/A	Die in Probed Wafer	8	N/A	0°C to +70°C

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